AMENDMENTS TO THE CLAIMS

1. (currently amended) A system for recharging and communicating with an implantable stimulator having a rechargeable battery comprising:

a base station;

an antenna/charging coil coupled to the base station that is used to inductively charge the rechargeable battery within the implantable stimulator and to transcutaneously communicate with the stimulator;

first circuitry for driving the antenna/charging coil with a ~~charging signal~~ first frequency when used as a charging coil;

second circuitry for driving the antenna/charging coil with a communication signal when used as a communication coil;

a booster coil coupled to the base station that is used to recover the rechargeable battery when [[is]] it is depleted to zero volts, wherein the booster coil is different from the antenna/charging coil; and

third circuitry for driving the booster coil with a second frequency, wherein ~~the third circuitry is different from the first circuitry~~ the second frequency is different from the first frequency.

2. (previously presented) The system of claim 1,

wherein the second circuitry accomplishes forward and backward frequency shift keying (FSK) telemetry with the implantable stimulator,

wherein the antenna/charging coil is configured and dimensioned to enable FSK telemetry.

3. (previously presented) The system of claim 2,
wherein the second circuitry accomplishes forward on-off keying (OOK) telemetry with the implantable stimulator using the antenna/charging coil.

4. (previously presented) The system of claim 1, further comprising:
current measuring circuitry for determining power consumption in the antenna/charging coil.

5. (previously presented) The system of claim 1, further comprising:
a printed circuit board (PCB) coupled to the antenna/charging coil and to the booster coil; and
sensing circuitry for sensing temperature included on the PCB.

6. (previously presented) The system of claim 5, further comprising:
automatic power shut-off circuitry for automatically shutting off power to the antenna/charging coil when the sensed temperature through the antenna/charging coil exceeds a predetermined level.

7. (canceled)

8. (previously presented) The system of claim 1, wherein the booster coil has a plurality of turns of wire in a plurality of layers wrapped around a coil spool.

9. (previously presented) The system of claim 1, further comprising:
power sensing circuitry for determining power consumption in the booster coil; and
automatic power shut-off circuitry for automatically shutting off power to the booster coil when the power consumption through the booster coil exceeds a predetermined power level.

10. (previously presented) The system of claim 1, further comprising:

a chair pad coupled to the base station;

a printed circuit board (PCB) contained in the chair pad;

sensing circuitry for sensing temperature included on the PCB; and

automatic power shut-off circuitry for automatically shutting off power to the booster coil when the sensed temperature exceeds a predetermined power level.

11. (previously presented) The system of claim 1, wherein the antenna/charging coil has a plurality of turns of wire wrapped around a coil spool.

12. (previously presented) The system of claim 10 wherein the chair pad is further comprised of:

a compliant housing made of foam; and

a coil assembly housing which contains the booster coil, the antenna/charging coil and the PCB,

wherein the foam housing encapsulates the coil assembly housing.

13. (previously presented) The system of claim 12, wherein the chair pad is further comprised of:

an exterior slipcover that surrounds the housing.

14. (previously presented) The system of claim 1,

wherein the booster coil is placed in a coil assembly with the antenna/charger coil, wherein the booster coil and antenna coil are wound over a spool coil in a configuration to present at least one substantially flat side,

wherein the coil assembly is fully encapsulated in an external housing.

15. (previously presented) The system of claim 14, wherein the housing is foam.

16. (previously presented) The system of claim 10, further comprising:

a chair pad cable that connects the chair pad to the base station; and

detection circuitry for automatically detecting disconnection of the chair pad cable from the chair pad.

17. (previously presented) The system of claim 1, wherein the base station includes:

a speaker for generating an audible sound to signal a system event.

18. (previously presented) The system of claim 1,

wherein the first circuitry is impedance matched to the antenna/charging coil with a first impedance matching network; and

wherein the third circuitry is impedance matched to the booster coil with a second impedance matching network.

19. (original) The system of claim 18, wherein the first impedance matching network is a 50 Ohm matching network and the second impedance matching network is a 50 Ohm matching network.

20. (previously presented) The system of claim 1, wherein the system includes the implantable stimulator, and wherein the implantable stimulator is a microstimulator having a maximum length-wise dimension of about 3.5 centimeters and a maximum width of about 5 millimeters.

21. (previously presented) The system of claim 1, further comprising:

a sensor for detecting power levels in the antenna/charging coil; and

a variable output power supply that automatically adjusts downwards when the sensor detects power levels that exceed a predetermined level,

wherein the variable output power supply is contained within the base station.

22-43. (canceled)

44. (previously presented) The system of claim 4, further comprising:

automatic power shut-off circuitry for automatically shutting off power to the antenna/charging coil when the power consumption through the antenna/charging coil exceeds a predetermined level.

45-61. (canceled)